BAKMAN WATER COMPANY

URBAN WATER MANAGEMENT PLAN

2010 UPDATE

NOVEMBER 2012

REVISED OCTOBER 2013

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ABBREVIATIONS – Entities

BWC ..... Bakman Water Company
Caltrans ..... California Department of Transportation
CDPH ..... California Department of Public Health
DWR ..... Department of Water Resources
EPA ..... Environmental Protection Agency
FID ..... Fresno Irrigation District
FMFCD ..... Fresno Metropolitan Flood Control District
ICWT ..... International Center for Water Technology
NCDC ..... National Climactic Data Center
NOAA ..... National Oceanic and Atmospheric Administration
SWRCD ..... State Water Resources Control Board
UWMP ..... Urban Water Management Plan
UWMPA ..... Urban Water Management Plan Act
UWMPGB ..... UWMP 2010 Guidebook
WMP ..... Water Master Plan

ABBREVIATIONS – Terminology & Units

AB ..... State Assembly Bill
ac ..... acre
ADD ..... Average Daily Demand
af ..... acre-feet
afy ..... acre-feet per year
bgs ..... below ground surface
CWC ..... California Water Code
DMM ..... Demand Management Measures
DU ..... dwelling unit
ft ..... feet
gpd ..... gallons per day
gpcd ..... gallons per capita per day
gpf ..... gallons per flush
MDD ..... Maximum Day Demand

mgd .....million gallons per day
µg/L .....micrograms per litre
pCi/L..... picocuries per litre
PHG .....Public Health Goal
PKH.....Peak Hour Demand
psi.....pounds per square inch
SB .....State Senate Bill
TCP 1,2,3-Trichloropropane
ULF .....Ultra-Low Flush toilet

1 INTRODUCTION

1.1 Purpose

The Urban Water Management Plan (UWMP) is a requirement of the Urban Water Management Planning Act (UWMPA) (Division 6, Part 2.6 of the California Water Code (CWC) §10610-10656). The UWMPs must be filed every five years and submitted to the Department of Water Resources (DWR). The submittal is required to meet the requirements of the UWMPA, including the most current amendments that have been made. The UWMPA applies to urban water suppliers with 3,000 or more connections being served or supplying more than 3,000 acre-feet (af) of water annually.

UWMPs are required of the state's urban water suppliers in an effort to assist their resource planning and to ensure adequate water supplies are available for future use. A secondary purpose of the UWMP is to provide for a plan or series of plans during water drought situations. This report was prepared according to the requirements of the CWC, UWMPA and the UWMP Guidebook 2010 for the Bakman Water Company.

1.2 Background

1.2.1 Urban Water Management Planning Act

In 1983, Assembly Bill (AB) 797 altered Division 6 of the CWC by producing the UWMPA. Since 1983, several amendments to the original document have increased the requirements of the UWMPs submitted today. One such amendment required projections for water use to extend 20 years at 5-year intervals. Recently, this has been increased to a 25 year projection providing for a minimum 20-year projection up until the next UWMP is completed.

Various other amendments have increased requirements to include sections on recycled water use, demand management measures (DMMs), and water shortage contingency plans. Recycled water use sections were added to assist in evaluation of alternate water supplies for future use when projects exceed the current water supplies. Demand management measures must be clearly described including which measures are being implemented and which are scheduled for implementation in the future. Water contingency plans are to be prepared and coordinated with other water suppliers in the area for use during times of drought. Pertinent bills that have passed are as follows.

Bill	Requirements
SB610 and AB901	Consideration of water availability when reviewing new large developments
SB318	Investigate possibilities of developing desalinated water
AB105	Submit UWMP to State Library
SBx7-7 Water Conservation Act (2009)	Urban water suppliers to reduce the statewide average per capita daily water consumption by 20% by December 31, 2020
AB1420	Water management grants or loans awarded or administered by the Department of Water Resources (DWR), State Water Resources Control Board (SWRCB)…be conditioned on the implementation of the water Demand Management Measures (DMM) described in Water Code Section 10631(f)
AB1465	Requires member of the California Urban Water Conservation Council to comply with UWMP requirements in accordance with the Urban Water Management Planning Act.
AB2572	All urban water suppliers are required to install water meters on all municipal and industrial water service connections on or before January 1, 2025 and, on or before January 1, 2010, to charge each customer that has a service connection for which a meter has been installed, based on volume of deliveries, as measured by the water meter.

1.2.2 Previous Urban Water Management Plan

Bakman Water Company has previously prepared an Urban Water Management Plan in 2005. Comments to the 2005 UWMP were received and responded to in May 2011.

This 2010 UWMP serves as an updated to the 2005 UWMP and complies with all new requirements and regulations.

1.3 Resource Maximization/Import Minimization

Bakman Water Company (BWC) optimizes many water management strategies and tools to maximize water resources and minimize the need for imported water. BWC worked with the Fresno Irrigation District, Fresno Metropolitan Flood Control District, County of Fresno, City of Clovis, City of Fresno, City of Kerman, Malaga County Water District, Pinedale County Water District, Garfield Water District and Bakman Water Company to develop the Fresno Area Regional Groundwater Management Plan in 2005. The plan was developed in accordance with California SB1938.

BWC also contributed to the 2007 Integrated Regional Water Management Plan (IRWMP) along with more than 20 other districts, cities and agencies that comprise the Upper Kings River Forum and is working on the 2012 IRWMP Update. The Plan objectives are[1]:

- Collect and compile water quality baseline data for the region and define opportunities to integrate existing local, state, and federal programs.
- Investigate and resolve legal and institutional issues that may affect project development.
- Identify and pursue sources of funding needed to support project development.
- Compile an inventory of existing water resources plans and policies for the region (including state agencies); include an inventory of local government and water district strategies and initiatives for dealing with water resources problems.
- Develop an integrated hydrologic model to determine regional water budgets, understand how the groundwater basin operates, evaluate and compare alternatives, and support decision making.
- Involve local water districts and land use agencies in generating and confirming the current and future water needs
- Seek to ensure compatibility and consistency with land use and water supply plans.
- Create and define opportunities to share data and information.
- Develop and implement a community affairs strategy to provide outreach and educate the public and decision makers on water management problems and solutions.
- Evaluate local and regional economic impacts and benefits of proposed projects.
- Identify potential environmental and ecosystem benefits associated with developing the IRWMP.
- Avoid environmental impacts during planning and project design where possible.
- Coordinate needed environmental review of the final alternative projects and programs.

[1] Upper Kings Basin 2007 Integrated Regional Water Management Plan

2 PLAN PREPARATION

2.1 Coordination

Legal Requirements:

§10620(d)(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

§10621(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by §10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, a city or county that receives notice pursuant to this subdivision.

§10635(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

§10642 Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.

§10642 Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.

The efforts to prepare this UWMP were coordinated with appropriate agencies to provide the most accurate and clear picture of the water picture in the service area.

Table 2-1: Coordination with Appropriate Agencies

(UWMPGB Table 1)

Coordinating Agencies	Participated in Developing UWMP	Commented on the Draft	Attended Public Meetings	Contacted for Assistance	Sent Copy of the Draft Plan	Sent Notice of Intention to Adopt
City of Fresno					X	X
City of Clovis					X	X
County of Fresno					X	X
Fresno Irrigation District					X	X
Fresno Metropolitan Flood Control District					X	X

2.2 Plan Adoption, Submittal, and Implementation

Legal Requirements:

> *§10640 – 10621(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3.*
>
> *§10642 After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*
>
> *§10643 An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.*
>
> *§10644(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.*
>
> *§10645 Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

Bakman Water Compay will hold a public hearing and adopt the 2010 UWMP in October 2012 (tentatively). A copy of the adopting resolution is included in Appendix A. Prior to the public hearing; a notice will be publishing notifying the public of the pending hearing.

Once the UWMP has been adopted, a copy of the UWMP and amendments will be submitted to DWR and the State Library. Once submitted to DWR, a copy will be made available for public review for 30 days and the reliability and Supply-and-Demand section will be submitted to Fresno County within 60 days.

3 SYSTEM DESCRIPTION

3.1 Service Area Physical Description

Legal Requirements:

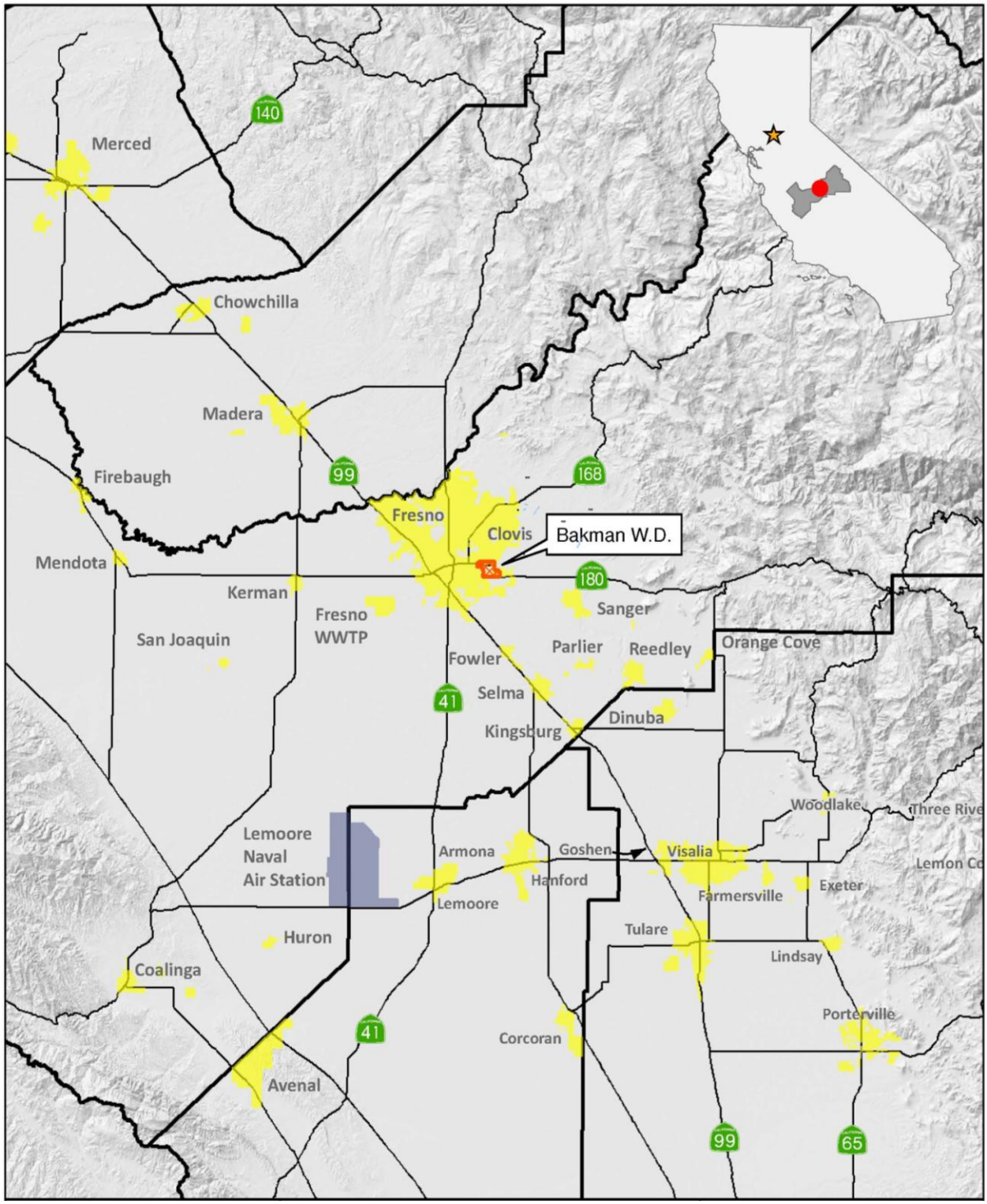
> *§10631(a) Describe the service area of the supplier.*
>
> *§10631(a) (Describe the service area) climate.*

3.1.1 Location and History

Bakman Water Company (BWC) was established in 1948 and lays just west of the Sierra Nevada foothills; partially within the city limits of the City of Fresno in Fresno County. The service area includes several 'county islands'; areas within the city limits which have not been annexed into the City and remain County of Fresno jurisdictions. Bakman Water Company's California Public Utilities Commission (CPUC) approved service territory, as defined in BWC's Tariff Book's Preliminary Statement, is "the area bounded by Olive Avenue, East Kings Canyon Road, Winery Avenue and Fowler Avenue, located approximately 1.5 miles east of Fresno, and vicinity, Fresno County". As a CPUC regulated public utility, BWC has an obligation to provide water service to any person/entity in its service territory requesting such service from BWC. Further, subject to CPUC approval of a service area extension request, BWC may also entertain requests for water service from outside its service area. BWC currently provides water service to an area encompassing approximately 1,655 acres and is home to 13,960 residents. The BWC service area is expanding in a manner typical of many communities that are part of metropolitan areas. Bakman Water Company lies close to half in the City of Fresno and half in the County of Fresno. The average people per household in the City and County are 3.15 and 3.07, respectively. Because BWC is not a Census area, an average between the City and County of Fresno was used, yielding a household size of 3.11[1].

Figure 3-1: Regional Location Map

[1] 2010 Census: http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml


Merced
140
Chowchilla
Madera
Firebaugh
99
168
Fresno
Clovis
Bakman W.D.
Mendota
180
Kerman
Sanger
Fresno
WWTP
San Joaquin
Parlier
Reedley
Orange Cove
Fowler
Selma
41
Dinuba
Kingsburg
Woodlake
Three Rive
Lemoore
Naval
Air Station
Armona
Goshen
Visalia
Lemon Co
Hanford
Exeter
Farmersville
Lemoore
Tulare
Huron
Lindsay
Coalinga
Porterville
41
Corcoran
Avenal
99
65

3.1.2 Land Use

The land within Bakman Water Company is developed or planned for residential and commercial uses. **Table 3-1** and **Figure 3-2** indicate the distribution of land amongst the various land use categories.

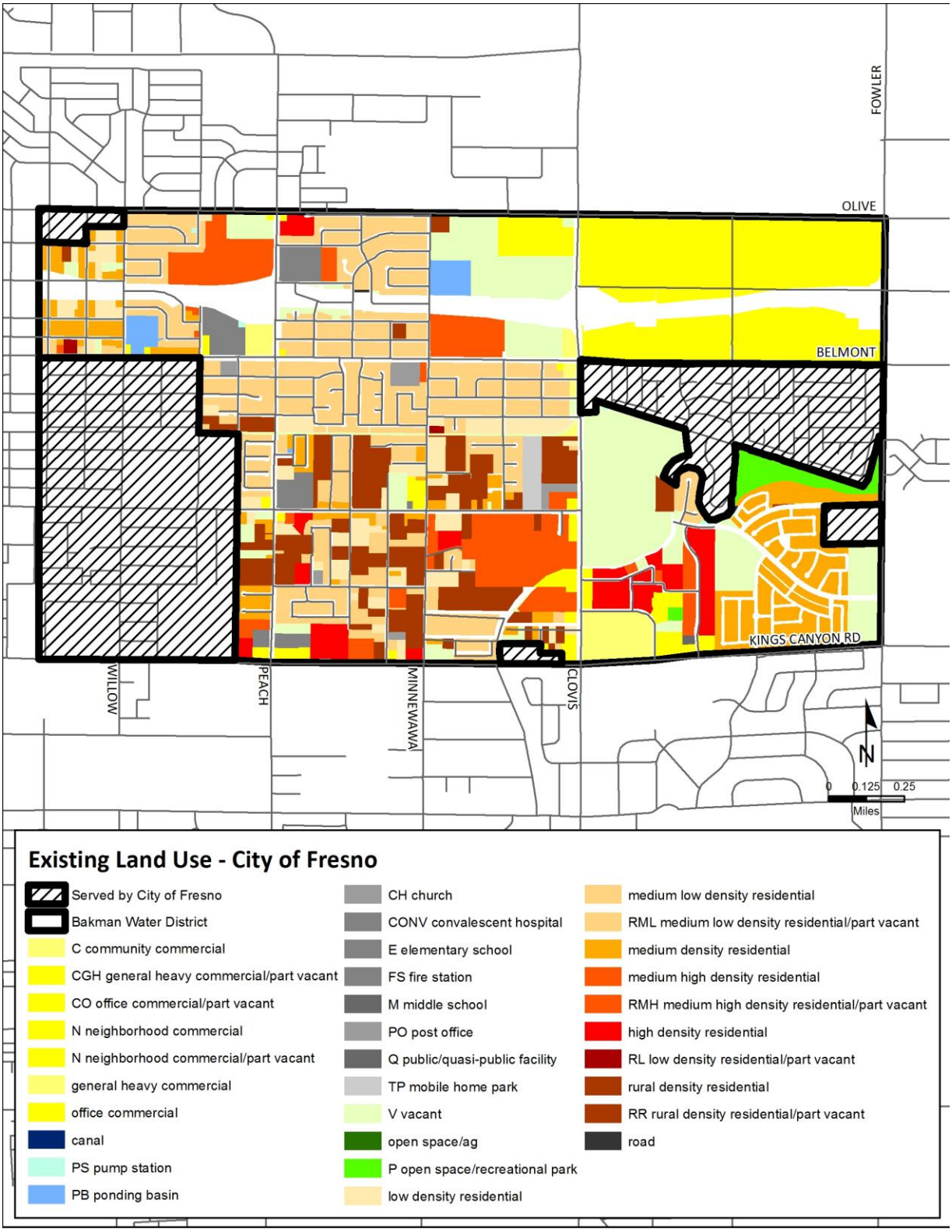
Table 3-1: Land Use Categories

Land use	Area (acres)	Percent of Total (%)
Residential	897	54.2
Commercial	105	6.3
Public/Open Space	22	1.3
Vacant	232	14
Government	39	2.4
Other[1]	361	21.8
Total	1,655	100

Notes:

[1] "Other" includes road and freeway rights of way; SR180 bisects BWC's service area and accounts for a large portion of this acreage

Figure 3-2: Land Uses



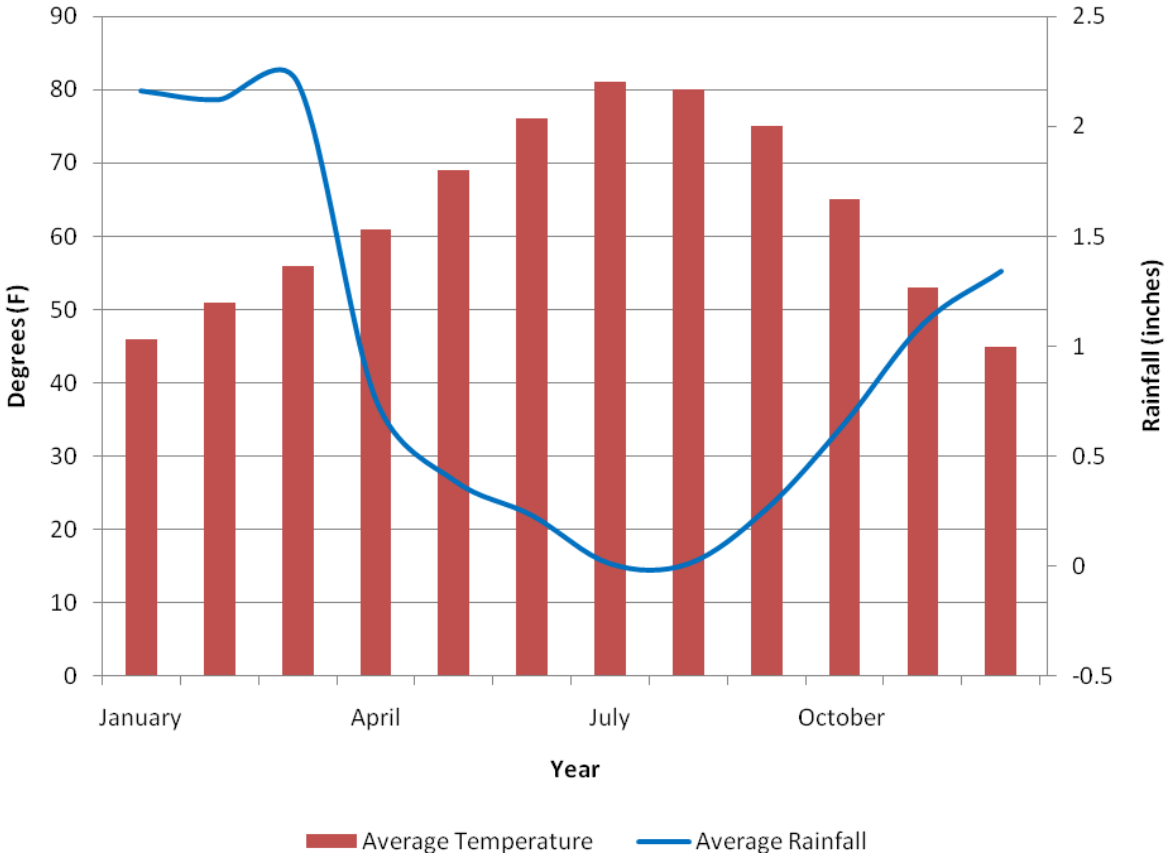
3.1.3 Climate

Bakman's service area has a semi-arid climate with hot, dry summers and mild winters. Average daily temperatures vary from minimums of 37.0° F in December to 66.1° F in July and maximums of 53.4°F in December and 96.6°F in July. The area receives an average annual precipitation of 11.23 inches. The precipitation varies considerably year to year. During the past 50 years, the smallest amount received was 6.07 inches and the largest 21.56 inches. Precipitation is largely confined to the late fall, winter and early spring months. Summer water consumption is three to five times winter consumption because of the lack of rainfall and the high temperatures.

Table 3-2: Climate Characteristics

Month	Maximum Temperature	Minimum Temperature	Average Temperature	Average Rainfall
January	54	38	46	2.16
February	61	41	51	2.12
March	66	45	56	2.20
April	74	48	61	0.76
May	83	55	69	0.39
June	91	61	76	0.23
July	97	66	81	0.01
August	95	65	80	0.01
September	89	60	75	0.26
October	78	52	65	0.65
November	63	42	53	1.10
December	53	37	45	1.34
Annual	75.3	50.8	63.2	11.23

Figure 3-3: Climate Characteristics



3.2 Service Area Population

Legal Requirements:

> *§10631(a) (Describe the service area) current and projected population…The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier…*
>
> *§10631(a) …(population projections) shall be in five-year increments to 20 years or as far as data is available.*
>
> *§10631(a) Describe…other demographic factors affecting the supplier's water management planning.*

As discussed previously, Bakman Water Company's service area is split nearly evenly between City and County of Fresno areas and is not defined as a Census Designated Place (CDP) independent of the City of Fresno. The population served by Bakman was calculated using United States Census data for the Census Tracts that lie either wholly or partially within the service area boundary. The applicable Census Tracts were identified and an approximate percentage of the tract that lies within the service area was determined. Once the percentage of each Tract was identified, the corresponding

percentage of population was summated to determine the total population for the service area. This process was completed for Census data associated with 2000 and 2010 and interpolated linearly for the intermediate years (2001-2009). Tables 3-3 and 3-4 illustrate the data used to determine the service area population for years 2000 and 2010, respectively. Population growth in BWC has averaged 1.1% per year over the past ten years. Population growth during the next five years is expected to continue at the same rate through 2030 until the service area is built out.

Table 3-3: 2000 Census Data

Tract	Total Tract Population	% Within Bakman Service Area	Bakman Service Area Population
29.01	8,036	38%	3,054
29.02	8,061	20%	1,612
30.01	3,133	50%	1,566
30.02	5,958	100%	5,958
14.03	6,038	7%	423
		Total	12,613

Table 3-4: 2010 Census Data

Tract	Total Tract Population	% Within Bakman Service Area	Bakman Service Area Population
29.03	4,329	20%	866
29.04	2,897	25%	724
29.05	2,889	95%	2,745
30.01	3,175	50%	1,587
30.03	4,154	100%	4,154
30.04	2,301	100%	2,301
14.11	5,276	30%	1,583
		Total	13,960

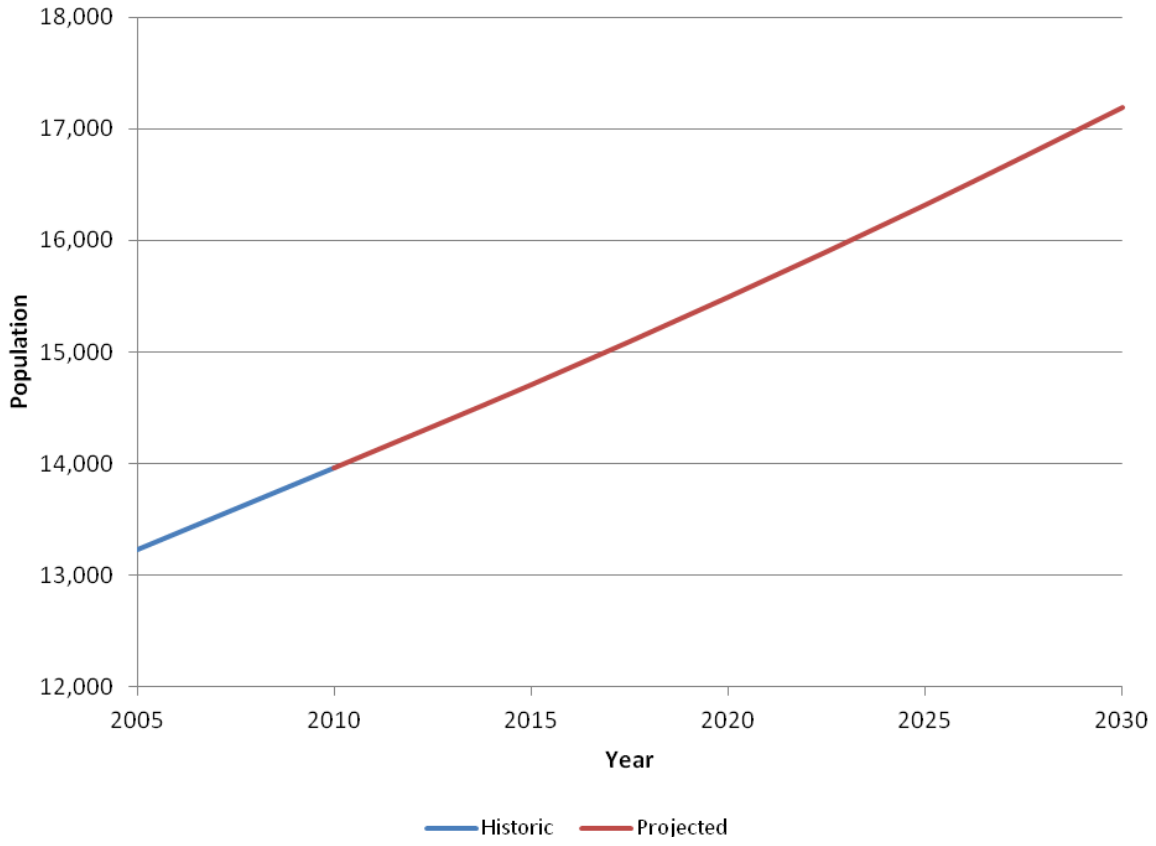
Table 3-5: Service Population – Current and Projected

(UWMPGB Table 2)

	2010	2015	2020	2025	2030
Service Area Population[1]	13,960	14,705	15,490	16,317	17,189

[1]Service area population is defined as the population served by the distribution system and was determined using Census data.

Figure 3-4: Population – Historical and Projected



The Fancher Creek development area is largely within the BWC service area and is expected to be fully developed over the next ten to twenty years; it will account for the majority of the growth in the area. The community is expected to include medium and high density residential and mixed-use commercial areas. BWC will provide water service to the residential and commercial connections in its service area. The developers will be conditioned for certain water improvements by Bakman Water Company to offset the community's peak water demands plus fire flow requirements.

4 SYSTEM DEMANDS

4.1 Historical Water Use

Water demands within the service area are largely residential, accounting for approximately 94% of the total service connections. As of 2010, BWC has 2259 services, 429 are metered, which is 19% of the total service connections.

In 2001, Bakman Water Company (BWC) produced 4,161 acre-feet of groundwater to serve a population of approximately 12,674. **Table 4-1** lists the historical water usages from 2001-2010, while **Table 4-2** illustrates the actual deliveries made during 2005 to each type of connection BWC serves, separated between metered and unmetered connections.

Table 4-1: Historical Water Use

Year	Potable Water Demand (afy)
2001	4,161
2002	4,108
2003	3,672
2004	4,258
2005	3,827
2006	3,912
2007	4,284
2008	4,363
2009	4,382
2010	4,054
Average	4,098

As illustrated in **Table 4-1**, BWC's water use has remained consistent over the past ten years. It is anticipated the trend will continue until the Fancher Creek subdivision is developed. With build-out of Fancher Creek, it is expected that the water use will increase initially and then remain constant or decrease slightly due to conservation measures put in place.

Table 4-2: Water Deliveries – 2005

(UWMPGB Table 3)

Water use sectors	Metered		Not metered		Total Volume
	# of accounts	Volume	# of accounts	Volume	
Single family			1,563		
Multi-family			218		
Commercial	66	218			218
Landscape	3				
Total	69	218	1,781	3,610	3,827
Units : afy					

4.2 Baselines and Targets

Legal Requirements:

> *§10608.20(e) An urban retail water supplier shall include in its urban water management plan…due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

Determining BWC's baseline per capita use is the first step of calculating the required targets for the 20-year planning period, which will allow DWR to determine BWC's compliance with required reduction described in the Water Conservation Bill of 2009.

4.2.1 Baseline

To calculate BWC's baseline water use, it was determined that BWC would take the 10-year approach, as they are not currently delivering over 10% of recycled water. A 5-year baseline must also be calculated to assist in establishing the reduction targets. The following table summarizes water deliveries made in 2008, substantiating the 10-year baseline approach.

Table 4-3: Base Period Ranges

(UWMPGB Table 13)

Base	Parameter	Value
10- year base period	2008 total water deliveries	4,363
	2008 total volume of delivered recycled water	0
	2008 recycled water as a percent of total deliveries	0
	Number of years in base period[1]	10
	Year beginning base period range	2001
	Year ending base period range[2]	2010
5-year base period	Number of years in base period	5
	Year beginning base period range	2004
	Year ending base period range[3]	2008

Units : afy
[1]If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period.
[2]The ending year must be between December 31, 2004 and December 31, 2010.
[3]The ending year must be between December 31, 2007 and December 31, 2010.

The data used to calculate the baseline is summarized in the following table. The UWMPA requirements state a continuous range must be used with the range ending between the end of 2004 and 2010.

Table 4-4: Base Daily Per Capita Water Use – 10 Year Range

(UWMPGB Table 14)

Base period year		Distribution System Population	Daily system gross water use (mgy)	Annual daily per capita water use (gpcd)
Sequence	Calendar Year			
1	2001	12,674	1,356	293
2	2002	12,811	1,338	286
3	2003	12,949	1,197	253
4	2004	13,089	1,338	290
5	2005	13,230	1,247	258
6	2006	13,373	1,275	261
7	2007	13,517	1,396	283
8	2008	13,663	1,422	285
9	2009	13,811	1,428	283
10	2010	13,960	1,321	259
10-Year Base Daily Per Capita Water Use				275

The following table summarizes the data used to calculate the 5-year baseline, which has a UWMPA requirement to be a continuous range, ending between the end of 2007 and 2010.

Table 4-5: Base Daily Per Capita Water Use – 5 Year Range

(UWMPGB Table 15)

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence	Calendar Year			
1	2004	13,089	1,388	290
2	2005	13,230	1,247	258
3	2006	13,373	1,275	261
4	2007	13,517	1,396	283
5	2008	13,663	1,422	285
5-Year Base Daily Per Capita Water Use[1]				276

4.2.2 Targets

Four methods have been developed to determine water use targets for BWC. The UWMPA requires a target be established for 2020 and an interim target for 2015. Each method and its calculated water use are described below.

4.2.2.1 Method 1 – 80 Percent

Method 1 is based upon the determined base daily per capita use as determined by the water supplier. The base daily per capita use is 275 gallons per person per day (gpcd). Method 1 requires that this usage be reduced to by 20%, yielding a target use of 220 gpcd.

4.2.2.2 Method 2 – Performance Standards

Method 2 uses commercial, industrial, institutional, indoor residential, and landscape water usage quantities to calculate a water use target. BWC is not fully metered, therefore making this method impractical for use in calculating a target water use.

4.2.2.3 Method 3 – 95 Percent Hydrologic Region Target

Method 3 is based upon the hydrologic region target, which is reduced by 5% to obtain the 95% Target. According to the 20x2020 Water Conservation Plan, the region-specific conservation goal is 188 gpcd for the Tulare Lake hydrologic region. With this information, Method 3 yields are target use of 179 gpcd.

4.2.2.4 Method 4 – Provisional

Development of Method 4 by DWR began in February 2010. The draft method was released on January 24, 2011. The draft method must be presented to several agencies including the California Water Commission before being adopted in mid-February 2011 and being released along with DWR's final 2010 guidebook. DWR has stated that this is a provisional method, subject to later revisions during the 2015 UWMP cycle. The methodology for the provisional draft method relies on the base daily per capita use in 2000 and reduction in the three urban use sectors:

- Residential indoor;
- Commercial, industrial, and institutional (CII); and
- Landscape use and water loss.

A discussion of each of these components, and the calculated savings in each of these sectors is included below.

4.2.2.4.1 Residential Indoor Savings

Since indoor and outdoor water use is delivered through a single meter, an assumption of 70 gpcd has been provided by DWR for standard residential indoor water use. To determine indoor residential savings, the draft provisional method outlines two methodologies. First, a best management practices (BMP) calculator has been developed to sum the savings for three conservation elements including single and multi-family residential housing toilets, residential washers, and showerheads. BWC does not, at this time, track actual water-savings of these types of conservation devices, therefore utilization of the BMP calculator will not be discussed further or used to assess indoor residential savings for BWC. BWC will use what has been termed the "default option" to determine these savings. Based on the draft provisional method, this default value is 15 gpcd.

4.2.2.4.2 Commercial, Industrial and Institutional Savings

Baseline CII water can be easily established for BWC since all commercial, industrial, and institutional connections were metered in 2000, 2005 and 2010. The calculated baseline for CII use (over the same 2001 through 2010 period) was 30.2 gpcd. The draft provisional method estimates a default value for CII savings of 10 percent. The CII water savings are therefore 3.0 gpcd.

4.2.2.4.3 Landscape and Water Loss Savings

The landscape and water loss water use is determined by subtracting the default indoor water use of 70.0 gpcd and CII water use of 30 gpcd from the calculated base line per capita use of 275. Based on calculated baseline per capita water use, the landscape and water loss use is 175 gpcd. The draft provisional method estimates a default value for landscape and water loss savings of 21.6 percent. The landscape and water loss savings are therefore 38 gpcd.

4.2.2.4.4 Metered Savings

Metered savings are considered in addition to the savings attributed to the three sectors previously discussed. Based on the provisional method, a meter savings of 20 percent is applied to the average delivery per unmetered connection in the midpoint of the baseline period. Using the assumed savings outlined in the provisional method of 20 percent, savings from metering is calculated as 75 gpcd.

4.2.2.4.5 Summary

Based on the steps above, the total water savings is estimated at 131 gpcd. When compared with the baseline demand of 275 gpcd, this would result in a water conservation target of 144 gpcd.

Table 4-6: Method 4 Summary

	Baseline Water Use (gpcd)	Water Savings (gpcd)
Residential Indoor	70[1]	-15.0
CII	30.2[1]	-3.0[2]
Landscape/Water Loss	329.5	-38[3]
Metered	N/A	-75.4[4]
Totals	275	-131
Water Conservation Target	**144**	

[1] Assumed value based on UWMPGB Draft Provisional Method 4
[2] CII water savings of 10% based on UWMPGB Draft Provisional Method 4
[3] Landscape and Water Loss savings of 21.6% based on UWMPGB Draft Provisional Method 4
[4] Metered savings of 20% based on UWMPGB Draft Provisional Method 4

4.2.2.5 Minimum Water use Reduction Requirement

The minimum reduction required by DWR is below 95% of the 5-year baseline, which is 262 gpcd, as defined in **Table 4-5**. This number is used as the target confirmation, to ensure that the target calculated is adequate to meet the State's objectives.

4.2.3 Summary of Baseline and Targets

The 2020 target was determined using Method 1, 80% of the 10-year baseline. According to DWR guidelines, this target is valid because it is less than the target confirmation. A summary of the baselines and targets is presented in the following table.

Table 4-7: Baseline and Targets Summary

Baselines (gpcd)		Target Determinations (gpcd)	
10-Year	275	Method 1	220
5-Year	276	Method 2	N/A
		Method 3	179
		Method 4	144
		Target Confirmation (gpcd)	262
		Target Selected (gpcd)	**220**
		Interim Target (gpcd)	**248**

Notes:
Method 1: 80% of 10-Year Baseline
Method 3: 95% of Hydrologic Region Target (Tulare - 170gpcd)
Target Confirmation: 95% of 5-Year Baseline
Interim Target: Target Selected plus 10-year Baseline, divided by 2

4.3 Water Demands

Legal Requirements:

§10631(e)(1) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural.

§10631(e)(2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

§10631.1(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

Since 2005, new connections to the water system have been added at an annual rate of 4.4% with an overall water demand has slightly increased by 1.2% per year. BWC has continued during the past 5 years to implement conservation measures throughout their service area. Because the consumption of some users is not monitored, the amount of losses cannot be determined exactly. **Table 4-1** indicates the historic water demands from 2000 through present. **Table 4-8** illustrates current and projected water demand from 2010 to 2030 in acre-feet per year and the number of metered/non-metered service connections for the same time period. The data for the year 2010 is actual data. For future years, the data is projected based population growth and water use targets as discussed above.

Residential Customer Class

In the BWC service area, customers average 3.11 persons per household. Total system per capita water production averages 275 gallons per day for all uses, including residential, commercial, industrial, schools and governmental. As the residential uses are not fully metered, it is unclear what the percentage of residential demand is as a portion of the entire system.

Commercial Customer Class

The growth in the consumption of this class of customer has fluctuated from year to year over the last 5 years. The demand of this class in 2010 is 16% lower than in 2005. However, the change in the number of connections has increased by 9%, which indicates the commercial class is utilizing water more efficiently than it has in the past.

Landscape Customer Class

This class includes all of the publicly maintained landscape in the service area. This class has decrease in connections by 13% since 2007 (data is not available for 2005-2006) but has increased its consumption by 38% in the same period. In the future, this class will continue to grow; however, it will grow more in line with population growth in both connections and consumption.

Table 4-8: Water Deliveries 2010 – 2030

(UWMPGB Tables 4, 5, 6 & 7)

Year	Account Information		Water Use Sectors								Total
			SF	MF	COM	IND	INST	LAN	CON	AG	
2010	Metered	# Accounts	299		72			58			429
		Deliveries (afy)	144		184			142			470
	Unmetered	# Accounts	1,662	168							1,830
		Deliveries (afy)									3,585
2015	Metered	# Accounts	812		197			151			1,160
		Deliveries (afy)	450		550			370			1,370
	Unmetered	# Accounts	1,056	104							1,160
		Deliveries (afy)	2,568	280							2,848
2020	Metered	# Accounts	1,250		304			232			1,786
		Deliveries (afy)	1,300		1,000			650			2,950
	Unmetered	# Accounts	542	54							596
		Deliveries (afy)	1,332	147							1,479
2025	Metered	# Accounts	1,712		416			318			2,446
		Deliveries (afy)	2,101		1,450			1,100			4,651
	Unmetered	# Accounts									0
		Deliveries (afy)									0
2030	Metered	# Accounts	1,757		427			326			2,510
		Deliveries (afy)	2,201		1,519			1,153			4,873
	Unmetered	# Accounts									0
		Deliveries (afy)									0

SF – Single Family
MF – Multi-Family
COM – Commercial
IND – Industrial
INST – Institutional/Governmental
LAN – Landscape
CON - Construction
AG - Agricultural

4.4 Water Demand Projections

Legal Requirements:

§10631(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

The population growth data summarized in **Table 3-3** was used to estimate the future water use within BWC. The population in 2010 was 13,960 and is projected to reach 17,189 by 2030.

The following series of tables summarizes the usage of water supply not identified previously followed by a summary of all water usage in BWC's service area. The projections are based on a similar growth pattern as the population where applicable.

Table 4-9: Sales to Other Water Agencies

(UWMPGB Table 9)

Water distributed	2005	2010	2015	2020	2025	2030
Not Applicable	0	0	0	0	0	0
Total	0	0	0	0	0	0

Bakman Water Company does not directly perform groundwater recharge; however they have an agreement with Fresno Irrigation District (FID) whereby they provide funding to FID who performs recharge efforts on their behalf. The FID operates and maintains a District-wide recharge program and the volume recharged specifically on behalf of BWC is not measured, therefore the volumes are not quantified in **Table 4-10**. Similarly, BWC customers contribute to the Fresno/Clovis Regional Water Reclamation Facility, which the City of Fresno operates to generate recycled water for use in recharge or other recycled water applications such as landscape irrigation. As such, this water use is not quantified in **Table 4-10** either. The system losses are estimated at 2% of total uses. The community is not fully metered; therefore, the losses are accounted for in the total water deliveries and not separated in the following tables. Once BWC is completely metered, it can be better quantified how much water is being lost due to system losses.

Table 4-10: Additional Water Uses and Losses

(UWMPGB Table 10)

Water use	2005	2010	2015	2020	2025	2030
Groundwater Recharge	0	0	0	0	0	0
Recycled water	0	0	0	0	0	0
System losses	77	81	84	89	93	97
Total	77	81	84	89	93	97
Units : afy						

Table 4-11: Total Water Use

(UWMPGB Table 11)

Water Use	2005	2010	2015	2020	2025	2030
Total water deliveries[1]	3,826	4,054	4,081	3,821	4,025	4,240
Sales to other water agencies[2]	0	0	0	0	0	0
Additional water uses and losses[3]	77	81	84	89	93	97
Total	3,826	4,054	4,081	3,821	4,025	4,240
Units : afy						
[1] Table 4-2 and Table 4-8 *[2] Table 4-9* *[3] Table 4-10*						

The community is not fully metered; therefore, the losses are accounted for in the total water deliveries and are not separated in the following tables. Once BWC is completely metered, it can be better quantified how much water is being lost due to system losses. The Total is the same as the total water deliveries for this reason.

4.5 Planned Development

Legal Requirements:

> *§10910(a) Any city or county that determines that a project, as defined in section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.*
>
> *§10912 For the purpose of this part, the following terms have the following meanings:*
>
> *§10912(a) "Project" means any of the following:*
>
> *(1) A proposed residential development of more than 500 dwelling units.*
>
> *(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.*
>
> *(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.*
>
> *(4) A proposed hotel or motel, or both, having more than 500 rooms.*
>
> *(5) A proposed industrial, manufacturing or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.*
>
> *(6) A mixed-use project that includes one or more of the projects specified in this subdivision.*
>
> *(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.*

Fancher Creek is planned for 476 acres, of which 327 acres lie within the Bakman Water Company service area. The development will increase the number of residential and commercial customers. The additional development is a mixed-use project that will demand an amount of water greater than the amount of water required by a 500 dwelling unit project; therefore it is considered a 'Project' as defined above. However, the demand has generally been anticipated as identified in Table 4-11.

4.5.1 Low Income Projected Water Demands

Fresno County Council of Governments' (COG) Regional Housing Needs Allocation (RHNA) estimates low income housing needs at approximately 6.50% and 5.10% within the County and City of Fresno, respectively for the period from 2006-2013. Assuming these needs will remain generally consistent in the future, it can be assumed an average of 5.8% of new housing units developed with the BWC service area will be low income. Anticipating that Fancher Creek will be built out with approximately 1,950 units by 2030, and 68.7% of the development lies within BWC's service area, roughly 78 low-income residences are anticipated by 2030 (1950 units x 68.7% x 5.8%). For projection purposes, BWC assumes the units will be built linearly over the development schedule; the water demands are illustrated in **Table 4-12**.

Table 4-12: Low-Income Projected Water Demands

(UWMPGB Table 8)

Low Income Water Demands	2015	2020	2025	2030
Residential Demands	17	15	15	15
Total	17	15	15	15
Units : afy				

4.6 Water Use Reduction Plan

Legal Requirements:

> *CWC§10608.26 Urban wholesale water suppliers shall include in the urban water management plans . . . an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts.*

The previously discussed conservation targets will provide a large amount of the required conservation and will take a significant effort to attain. The following demand projections are not inclusive of the demand management measures, as those are difficult to quantify and will be better understood with actual data as the measures are implemented.

Table 4-13: Total Water Use Projections

Demand Projection	2015	2020	2025	2030
Population	14,705	15,490	16,317	17,189
Demand Projection w/o Water Conservation	4,535	4,777	5,032	5,300
Demand Projection w/ Water Conservation	4,081	3,821	4,025	4,240
Difference	-453	-955	-1,006	-1,060
Units : afy				

Figure 4-1: Water Use – Historical and Projected

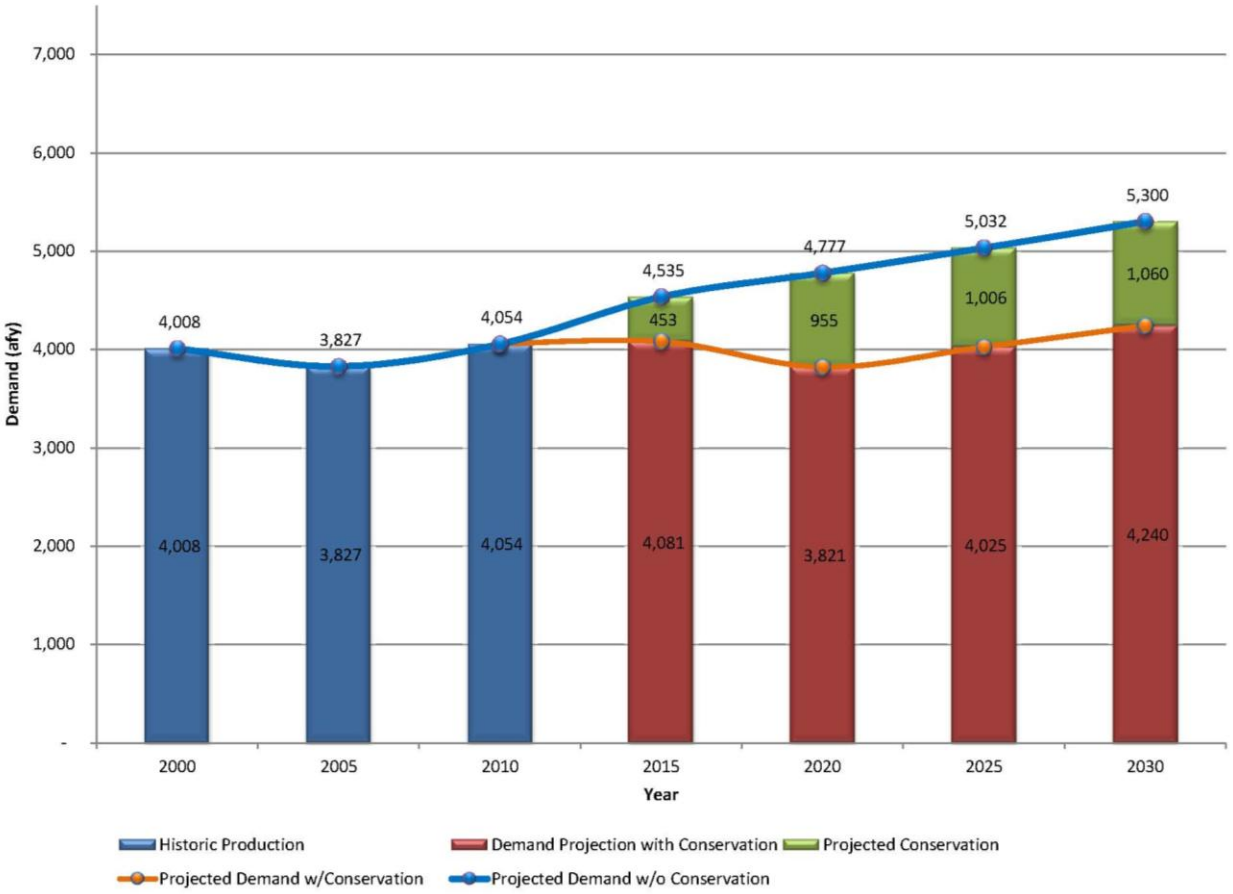


Figure 4-1 shows the disparity between the projection with and without conservation practices in place. BWC will have to achieve a water savings of 1,060 afy by 2030. To achieve these savings, BWC will make efforts toward implementing the DMMs described below. Of primary concern are the residential DMMs, as the customer basis is largely residential.

5 SYSTEM SUPPLIES

5.1 Water Sources

Legal Requirements:

> *§10631(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

UWMPA requirements state that the water supplier must describe their existing and planned water supply sources for the next 20 years. The following description includes information such as water rights, an overdraft summary, any adjudication decrees and other pertinent information from the ground water management plan.

5.1.1 Water Supply and Storage Facilities

Bakman Water Company currently has one source of water available to it; groundwater. BWC has 14 wells, of which 11 are active wells that serve its connections. In 2010, BWC wells produced 4,054 acre-feet. The system does not have storage facilities presently, but a storage reservoir will be constructed with the Fancher Creek development.

Current and future supply projections through 2030 are shown in **Table 5-1**.

Table 5-1: Water Supplies

(UWMPGB Table 16)

Water Supply Sources	2010	2015	2020	2025	2030
BWC-produced groundwater[1]	4,054	4,081	3,821	4,025	4,240

Units : afy
[1] Supplies are based on utilization of conservation measures and attaining the water conservation goals discussed above.

Table 5-2: Wholesale Supplies

(UWMPGB Table 17)

Wholesale Sources	Contracted	2015	2020	2025	2030
Not Applicable	0	0	0	0	0

BWC does not use wholesale water for its supply source.

5.2 Groundwater

Legal Requirements:

§10631(b) (Is) groundwater…identified as an existing or planned source of water available to the supplier…?

§10631(b)(1) (Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

§10631(b)(2) (Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

§10631(b)(2) For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board.

§10631(b)(2) (Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

§10631(b)(2) For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

§10631(b)(3) (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

§10631(b)(4) (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

5.2.1 Groundwater Description and Management Plan

Bakman Water Company lies within the Kings Groundwater Sub-basin, which lies within the San Joaquin Basin Hydrologic Study Area. The Kings Sub-basin is also identified as sub-basin 5-22.08 of the Tulare Lake Hydrologic Basin in the Department of Water Resources Bulletin 118. The Kings sub-basin has been identified as critically overdrafted. Total storage in the basin was estimated to be 93,000,000 acre-feet in 1961 (Williamson, 1989). The groundwater aquifer from which BWC obtains it water is not adjudicated. There are however agencies within Fresno County which have adopted groundwater management plans in accordance with AB3030. Clovis, Fresno City, Fresno County and Fresno Irrigation District have all adopted Plans. BWC participated in the Fresno Area Regional Groundwater Management Plan Update, which was completed in 2007, and implements a majority of the practices and strategies delineated in the plan.

BWC's sole source of drinking water is the groundwater aquifer underlying the community. BWC currently delivers approximately 4,054 acre-feet of water per year from its 11 active wells.

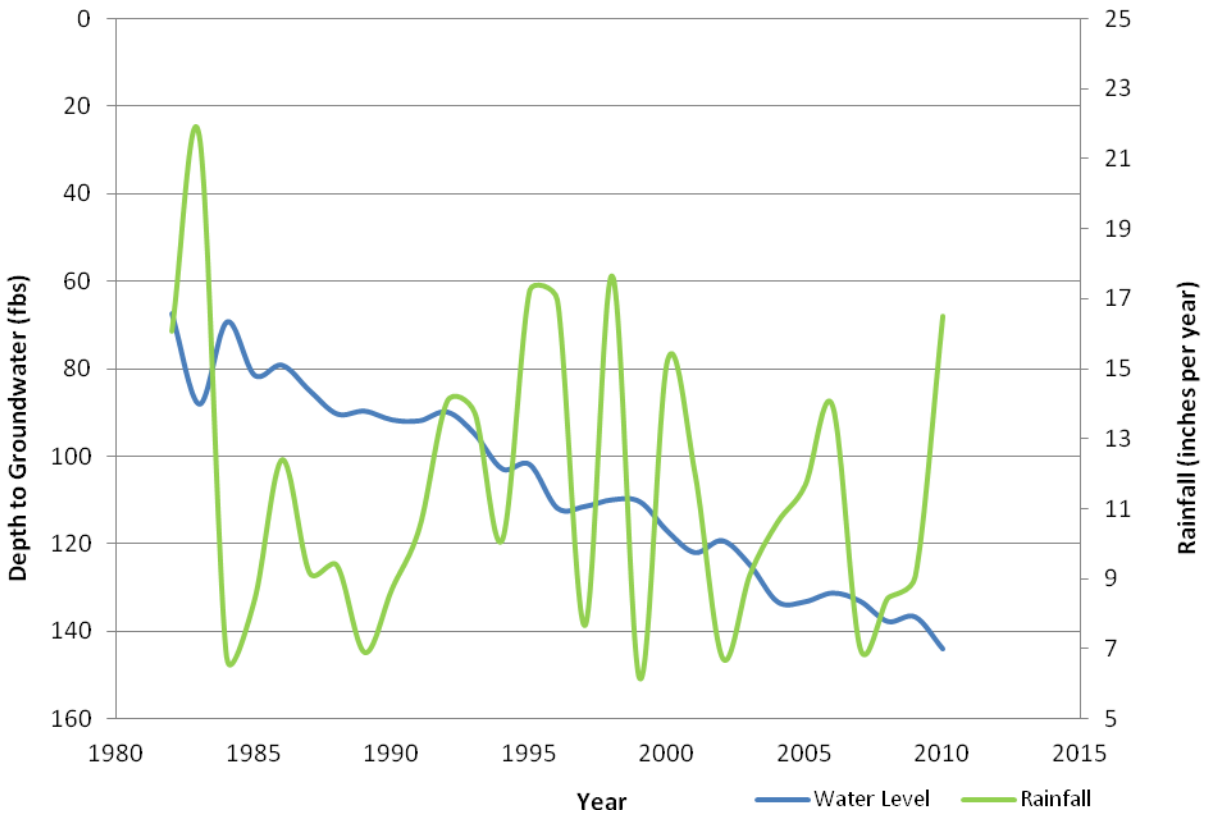
5.2.2 Groundwater Levels and Historical Trends

The average groundwater elevation in 2010, according to the USGS groundwater field data, was 144 feet below the ground surface, which is a decrease of approximately 71 feet from the groundwater elevation of 73 feet below ground surface in 1981.

Table 5-3: Depth to Water & Rainfall

Average Depth to Water and Rainfall					
Year	Water Level (feet)	Rainfall (inches)	Year	Water Level (feet)	Rainfall (inches)
1982	67.53	16.08	1996	111.97	16.97
1983	88.2	21.64	1997	111.58	7.68
1984	69.4	6.77	1998	110.04	17.65
1985	81.58	8.4	1999	110.5	6.17
1986	79.29	12.41	2000	117.23	15.24
1987	85.08	9.19	2001	122.12	12.02
1988	90.44	9.39	2002	119.4	6.75
1989	89.8	6.91	2003	124.97	9.14
1990	91.8	8.73	2004	133.39	10.63
1991	92	10.49	2005	133.35	11.68
1992	90	14.08	2006	131.35	13.94
1993	95	13.75	2007	133.24	7.03
1994	103	10.12	2008	137.87	8.46
1995	102	17.25	2009	136.83	9.08
			2010	144.14	16.51

Figure 5-1: Depth to Groundwater



5.2.3 Sources of Recharge

The current recharge agreement between the BWC and FID provides parameters by which FID will conduct groundwater recharge on behalf of BWC. At this time, BWC and FID are in negotiations to finalize a new recharge agreement that will incorporate the use of Fresno Metropolitan Flood Control District (FMFCD) basins for recharge within or adjacent to BWC's service area. The primary objective of the new recharge agreement with FID is to focus recharge efforts within the BWC service area in an effort to provide direct benefit to their customers and to offset groundwater extractions. The agreement is expected to be finalized in 2013. Recently BWC has completed a joint project with FMFCD to improve the conveyance infrastructure related to Basins W and X. Projects such as these will enable BWC to begin directly recharging as soon as the agreement with FID is finalized.

5.2.4 Existing and Projected Groundwater Pumping

BWC has historically relied on groundwater pumping for all of its water supply. The following tables show the quantities of groundwater BWC has pumped in the last five years and anticipates what will be pumped through 2030.

Table 5-4: Groundwater – Volume Pumped

(UWMPGB Table 18)

Basin name(s)	Metered or Unmetered	2006	2007	2008	2009	2010
Kings River Basin	Metered	3,912	4,284	4,363	4,382	4,054
Total groundwater pumped		3,912	4,284	4,363	4,382	4,054
Percent of total water supply		100%	100%	100%	100%	100%
Units : afy						

Table 5-5: Groundwater – Volume Projected to be Pumped

(UWMPGB Table 19)

Basin name(s)	2015	2020	2025	2030
Kings River Basin	4,081	3,821	4,025	4,240
Total groundwater pumped	4,081	3,821	4,025	4,240
Percent of total water supply	100%	100%	100%	100%
Units : afy				

As shown in **Tables 5-4** and **5-5**, the amount of groundwater being pumped has seen a moderate increase that is consistent with the population growth. The future pumping is expected to continue to grow at a similar rate.

5.3 Transfer Opportunities

Legal Requirements:

> *§10631(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*

Bakman Water Company does not have interties with any other water suppliers; therefore the ability to transfer or exchange water is not possible. Therefore, UWMPGB Table 20 is not applicable.

5.4 Desalinated Water Opportunities

Legal Requirements:

§10631(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Because Bakman Water Company is located in the Central San Joaquin Valley, there are no opportunities to develop desalination of ocean water or brackish ocean water. In addition, the groundwater is of adequate quality and desalination is not necessary.

5.5 Recycled Water Opportunities

Legal Requirements:

§10633 Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

§10633(a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

§10633(b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

§10633(c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

§10633(d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

§10633(e) (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

§10633(f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

§10633(g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

The Bakman Water Company service area's wastewater is treated at the Fresno-Clovis Regional Wastewater Treatment Plant (Plant), located southwest of the City of Fresno. Bakman estimates the quantity of wastewater treated on their behalf is the amount of water delivered to their customers for indoor water use. According to the *California Single-Family Water Use Efficiency Study*, 47 percent of the amount of water delivered for residential use is used indoors. To obtain the amount of water delivered for residential use, the total delivered minus the tracked landscape accounts was calculated. The total delivered water in 2010 (see Table 4-8) was 4,055 acre-feet, minus 142 acre-feet yields 3,913 acre-feet delivered to customers; 47% of this total is 1,839 acre-feet (599 MGY). Currently the water is treated to the secondary level and then

partially spread in percolation ponds or used directly on non-food crops. The plant then uses wells on the treatment plant property to pump water (reclaimed) in order to reduce groundwater mounding under the plant. The reclaimed water is then put into Dry Creek and the Houghton Canal for use by farmers downstream. In exchange, FID provides the City of Fresno an additional one af of surface water for each two af of reclaimed water pumped and put into the canals. BWC customers pay sewer fees to the City of Fresno and contribute to the quantity of water available to be reclaimed. BWC is not processing or reusing the reclaimed water in their service area therefore, the UWMP Guidebook Tables 21-25 are not applicable.

Regarding the regional wastewater treatment plant, the City of Fresno, who is the responsible manager of the Plant, is currently preparing to provide tertiary treatment and is identifying viable uses and customers. Although BWC does not have any active recycled water infrastructure in place, recycled water main (purple pipe) has been installed in Fowler and Kings Canyon Avenues in conjunction with the Fancher Creek development; more is proposed as the project moves forward. The project and possibly other areas within BWC's service area could potentially utilize some of the treated effluent for use as landscape irrigation, which would allow BWC to quantify the amount of recycled water being utilized. Due to the uncertainty of these quantities, project details are not available at this time.

5.6 Future Water Projects

Legal Requirements:

> *§10631(h) (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

Bakman Water Company has identifed 11 acres of property to be converted into a dedicated groundwater recharge facility This facility is located just northwest of the Fancher Creek crossing at Fowler Avenue. Once operational, this facility can help offset the condition of groundwater overdraft and improve the dry year groundwater supply in the local area. Although commencement of the project is anticipated in 2015, the engineering component has not been completed and it is premature to estimate the quantity of water to be recharged through this project. UWMP Guidebook Table 26 is not applicable due to this circumstance.

6 WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLAN

6.1 Water Supply Reliability

Legal Requirements:

> *§10620(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*
>
> *§10631(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) an average water year, (B) a single dry water year, (C) multiple dry water years.*
>
> *§10631(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

6.1.1 Frequency and Magnitude of Supply Deficiencies

Bakman Water Company relies solely on groundwater, as previously discussed. The most likely reason the system would have a supply deficiency would be due to contamination, repairs, an emergency or reduction of supply (aquifer levels reducing further).

In the instance of contamination, repairs or an emergency, BWC's system has been designed to avoid major system deficiencies. The system is fully looped and has several points of redundancy to aid in prevention of a supply deficiency. The system was constructed such that if the transmission mains traversing SR180 were to be compromised, the two halves of the system could operate independently for a significant period of time.

Regarding the reduction of supply scenario, BWC is already being proactive in conservation and public education to reduce the demand on the groundwater aquifer. However, if the groundwater levels continue to drop, modifications to the existing wells or construction of additional wells would be considered. This type of deficiency would not be sudden and BWC could easily plan for avoiding a reduction in supply.

While the system is designed to avoid a catastrophic supply deficit, in the instance of a contamination problem, a temporary solution would need to be considered and implemented quickly to restore the supply to its previous level; a more permanent solution would then be developed. There are three major types of contamination that could cause problems for BWC's wells, bacteriological, organic and inorganic. Any of these water quality problems can cause a well to be shut down temporarily or sometimes permanently. When a well supply exceeds the State's Maximum Contaminant Level (MCL) for a non-acute primary standard, a six month period of

monthly sampling is conducted before a decision is made regarding the continued production of water. During the six month period, preliminary analysis and planning for solutions could be developed. The solution options could include treatment or blending with an uncontaminated source to bring the entire supply within the MCL parameters.

Wells occasionally have to be shut down temporarily due to necessary repairs. These can include electrical problems, lowering of pump bowls, valve repairs, and pump motor repairs, amongst others. Typical well repairs cause the well to be unavailable for a few days or weeks. If the repair is significant and requires the well to be unavailable for a long period of time, BWC would develop a plan for replacing the water supply during the repair period prior to disrupting its production, if possible.

An emergency in which BWC could be hampered in delivering water might be as routine as power failures or as extraordinary as a severe earthquake which causes power failures and breaks in supply lines. Most power failures do not affect the entire service area at one time; when it does happen, it usually lasts no more than two to four hours. However, the BWC has taken steps to prevent a prolonged power outage from disrupting service. The system has backup generators in place on the two largest wells. Additionally, the wells in the system have been strategically located within several PG&E service areas, so rolling black-outs will not affect the entire water supply at any one time.

6.1.2 Basis of Water Year Data

Historical rainfall data was obtained for the Bakman Water Company service area from the National Climactic Data Center (NCDC), a climate data service offered by the National Oceanic and Atmospheric Administration (NOAA)[1]. The data was examined to establish a basis of water year for average, single-dry and multiple-dry years. The selected years are shown in **Table 6-1**.

Table 6-1: Basis of Water Year Data

(UWMPGB Table 27)

Water Year Type	Base Year(s)
Average Water Year	2005
Single-Dry Water Year	1999
Multiple-Dry Water Years	2007-2009

[1] Source: http://www.ncdc.noaa.gov/cdo-web/ Data was examined for the Fresno Yosemite International Airport Station (period of record 1931-2011).

6.1.3 Supply Reliability

During drought years, water use patterns typically change. Outdoor water use will typically increase as irrigation is used to replace the decrease in precipitation. However, the increase in outdoor use can be offset, in part, by increasing mandatory conservation measures.

In order to assess the impact of drought years on BWC's annual demands, BWC's historical per capita water usage was calculated. By dividing BWC's service area population into the total water consumed on an annual basis, consumption in gallons per capita per day (gpcd) was determined. This method of annual consumption, based on current population, eliminates the impact of growth changes. The historical per capita consumption from 2001 to 2010 is shown in **Figure 6-1**.

As shown, the per capita consumption in 2001 was about 6.5 percent above the 10 year average of 275 gpcd calculated in **Table 4-7**. The 10 year Historic Per Capita Demand is considered indicative of the maximum potential variation in water demands on an annual basis. As shown in **Figure 6-1**, the year 2001 represents the largest increase in water demand above the Historic Per Capita Trend. For purposes of calculating the impact of dry years, water demands will be increased by 6.5 percent for single dry and multiple dry hydrologic years.

Figure 6-1: Historic Per Capita Demand

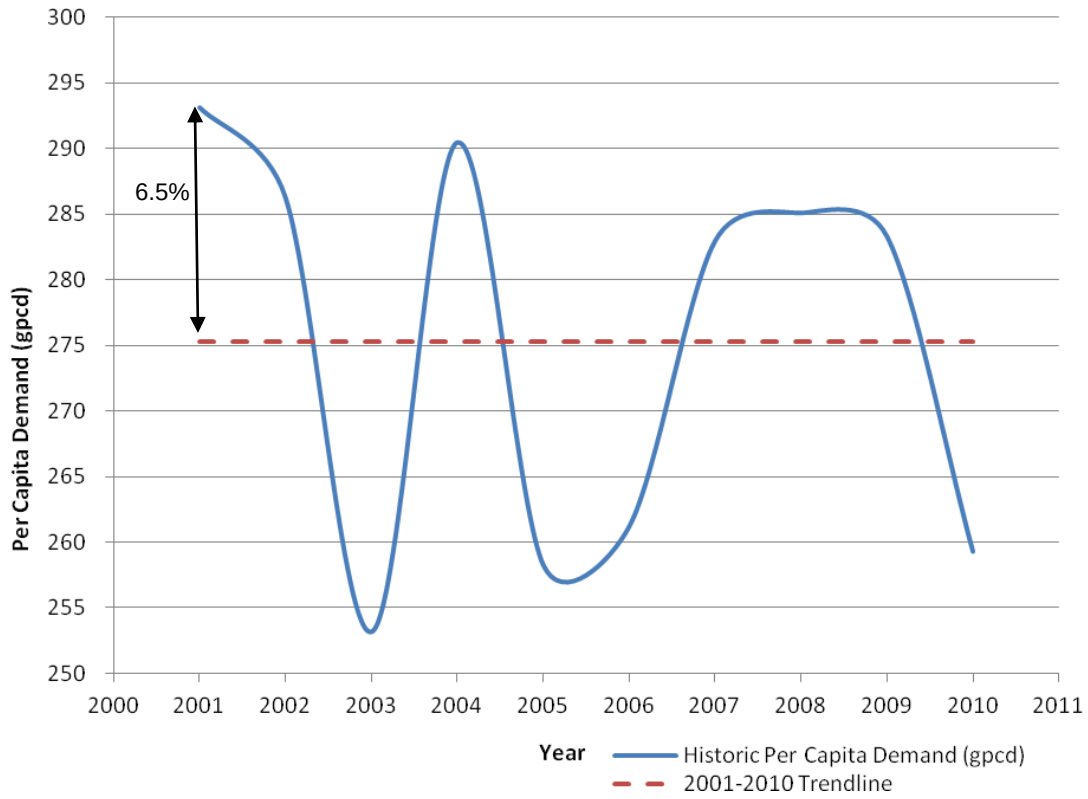


Table 6-2 presents calculations showing the percentage of supply available for the hydrologic years shown in **Table 6-1**. The percentages of normal year shown in **Table 6-2** were calculated by comparing the actual per capita demand for that year to the per capita demand trend of 275 gpcd. Since BWC relies solely on groundwater to meet its demands, the available "supply" drawn from the groundwater aquifer in any year is essentially equal to the system water demand for that year. As such, the variation in per capita water use from the historic trend does not necessarily coincide with "dry" or "wet" years. These percentages are not used in this report for projecting future increases in water demands, as per capita demands have been highly variable. The calculation of the percent of water supply consumed relative to the Normal Year Water supply is shown in **Table 6-2**. Bakman Water Company, in a dry and multiple dry water years used more water than the Normal Water Year, ranging from 1 percent to 16 percent.

Table 6-2: Supply Reliability – Historic Conditions

(UWMPGB Table 28)

Supply Source	Normal Water Year (1999)	Single Dry Water Year (2005)	Multiple Dry Water Years		
			Year 1 (2007)	Year 2 (2008)	Year 3 (2009)
Ground Water	3,790	3,827	4,284	4,363	4,382
Total	3,790	3,827	4,284	4,363	4,382
% of Average Year:	100%	101%	113%	115%	116%

[1] Estimated water consumption per population and per capita demand.
[2] Actual water consumption

Based on conservative planning assumptions, BWC's current supply reliability is summarized in **Table 6-3**. The "Normal Year" water use was calculated by multiplying BWC service area's 2010 population by the baseline per capita water usage of 275 gpcd. This equates to an annual volume of 4,305 acre-feet per year for a "normal" condition; however, BWC's actual 2010 water use was 4,054 acre-feet. This variation is because the Normal Water Year demand estimate is based on a 10 year Historic Per Capita Trend, see **Figure 6-1**. The Single and multiple dry year consumptions are assumed to be 6.5 percent more than the normal water use, based on **Figure 6-1**.

Table 6-3: Supply Reliability – Current Water Sources

(UWMPGB Table 31)

Water Supply Sources	Normal Water Year	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Bakman-produced groundwater	4,305[1]	4,583[2]	4,583	4,583	4,583
Percent of Normal Year:	100%	106%	106%	106%	106%

Units : afy
[1] Normal Water Year 2010 = Historic Per Capita Demand (275 gpcd) * 2010 Population (13,960)*365 days/year / 325,851
[2] Normal Water Year 2010 = 4,305 acre-ft * 106.5% = 4,583 acre-ft

6.1.4 Projected Normal Water Year Demands

The normal year water demands are based on the historical data and population projections developed above. The demand and supply data is discussed in more detail in Sections 3 and 4, respectively.

Table 6-4: Supply and Demand Comparison – Normal Year

(UWMPGB Table 32)

Water Use	Water Use			
	2015	2020	2025	2030
Supply totals [1]	4,081	3,821	4,025	4,240
Demand totals[2]	4,081	3,821	4,025	4,240
Difference	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%
Units : afy				
[1] UWMPGB Table 16 *[2] UWMPGB Table 11*				

As shown, both supply and demand are expected to increase linearly from 2015 to 2030, as expected. The supply will be provided solely by groundwater sources discussed previously.

6.1.5 Projected Single Dry Water Year

The single dry water year will not vary from the normal year due to the sole water supply being groundwater, which is not effected by dry years.

Table 6-5: Supply and Demand Comparison – Single Dry Year

(UWMPGB Table 33)

Water Use	Water Use			
	2015	2020	2025	2030
Supply totals[1]	4,345	3,780	4,025	4,240
Demand totals[2]	4,345	3,780	4,025	4,240
Difference	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%
Units : afy [1] Supply total includes only groundwater supply from UWMPGB Table 16, plus 6.5%. [2] Demand total includes normal year demand projection from UWMPGB Table 11, plus 6.5%.				

6.1.6 Projected Multiple Dry Water Years

The projected multiple dry year water demands through 2030 are estimated based on the normal year demands and the anticipated demand and supply increase of 6.5%. The projected multiple dry water year supplies and demands are presented in **Table 6-6**.

Table 6-6: Supply & Demand Comparison – Multiple Dry Years

(UWMPGB Table 34)

Water Use		Water Use			
		2015	2020	2025	2030
Year 1	Supply totals	4,345	3,780	4,025	4,240
	Demand totals	4,345	3,780	4,025	4,240
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Year 2	Supply totals	4,345	3,780	4,025	4,240
	Demand totals	4,345	3,780	4,025	4,240
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Year 3	Supply totals	4,345	3,780	4,025	4,240
	Demand totals	4,345	3,780	4,025	4,240
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Units : afy					

6.1.7 Factors Affecting Supply Reliability

The factors that can affect water supply reliability are varied. Within BWC's service area, the main factor that can potentially affect the water supply reliability is a quantity of water limitation. As BWC relies solely on groundwater and the entire Upper Kings Basin is in a condition of critical overdraft, all water purveyors that rely on the groundwater supply in the region are subject to supply quantity reliability and BWC experiences the same effect.

The groundwater basin is not currently adjudicated, so legal factors are not a concern for BWC. If that were to change in the future, BWC and other regional groundwater users would need to reevaluate their water supply situation.

UWMPGB Table 29 is not included as the Legal, Environmental, Quality and Climatic factors are not applicable to the system's water supply, at this time.

6.2 Water Shortage Contingency Planning

Legal Requirements:

§10632(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

§10632(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.

§10632(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

§10632(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

§10632(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

§10632(f) Penalties or charges for excessive use, where applicable.

§10632(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures or the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

§10632(h) A draft water shortage contingency resolution or ordinance.

§10632(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

§10635(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

6.2.1 Water Shortage Stages and Reduction Objectives

Water shortages may be mitigated by either increasing supply or reducing demand. Increasing supply for BWC includes the following possible methods: drilling additional wells; rehabilitation of existing wells or building water storage reservoirs; the Fancher Creek development plans to install a 400,000 gallon storage tank. Each of these methods requires a long lead time before operational capability. This minimizes their usefulness in a drought situation where a solution may be needed immediately. They are however useful as a long term supply augmentation plan.

Demand reduction is the quickest and least costly method of addressing supply shortages caused by a drought, emergency or other unforeseen events. Utilization of demand reduction measures should not result in additional water supply for future planning purposes.

Techniques for demand reduction which could be used are as follows: water surveys; leak detection; plumbing fixture replacement and retrofit; irrigation restrictions; information programs; specific use restrictions; new connection restrictions; plumbing Code changes; development restrictions on landscaping and pools; development offset programs; rationing; or price restructuring. Any one or a combination of these could be used depending on the severity of the shortage.

Supply Augmentation Measures

Drilling new wells requires a minimum of one year to become operational, from drilling the test hole to installing the pump and motor. This measure therefore, cannot be used as a quick response to an emergency supply deficit. A new well can provide between 400 and 2200 gallons per minute. The cost can vary between $200,000 and $300,000 depending on size and location. If the quality of the well does not meet State standards, which often is not known until after the well has been in production for a minimum of 6 months; the well may need treatment. This can take up to a year to design and build and cost approximately $500,000. Drilling a well and treating a well both require approval from the California Public Utilities Commission (CPUC) and the California Department of Public Health (CDPH). An environmental review is also required. Depending on the type of treatment required however, environmental clearance could become more difficult and time consuming. The operation and maintenance cost of a treated well is higher than an untreated one. The drilling of new wells is a measure that should be undertaken as growth requires. It is not a measure that can be taken quickly enough to solve an immediate shortage problem. Treatment facilities also cannot be installed quickly and so should be viewed as a long term supply enhancement.

Rehabilitation of a well can take many forms, from drilling deeper, replacing the pump and motor, slipping a new casing or screening inside of the existing casing, redeveloping open bottom wells, lowering the pump bowls, and swabbing and jetting the casing. The cost therefore can vary considerably depending on what process is used and the size and depth of the well. It could be $5,000 or as much as $20,000 or more. If the well was not operational previously then the yield may be between 400 gallons per minute up to 2200 gallons per minute depending on the well's original production. If the well is operational and it is just being enhanced, the yield may be increased 100 gallons per minute or more. Normally the quality of water from a rehabilitated well is not changed from the previous quality unless old strata are sealed or new strata tapped. The time needed to rehabilitate a well averages 3 months and does not require any environmental review or water permit amendments. This measure is cost effective in the case of a well which is not operational and can be completed in a short time. It should be utilized as good candidates for well rehabilitation come up, but cannot be counted upon when an unplanned shortage occurs.

Building more storage reservoirs takes a minimum of one year and can be very expensive. This measure does not actually increase the amount of water available but provides additional supply during peak periods. The water quality is not affected by reservoir storage. Building more storage reservoirs is not cost effective in areas where

new wells can be drilled, but for instance, where the quality of the well water is poor or in low quantity, a reservoir is effective in providing additional pressure and supply during peak demand periods.

Demand Reduction Measures

Water audits and fixture leak detection and repair are measures that go hand in hand. They however are not quickly implemented. It could take months to survey all of BWC's accounts and unless these measures were done in conjunction with rationing or price restructuring, customers would have little incentive to follow through with repairs or change their habits. The cost of conducting water surveys and fixture leak repair are high relative to the amount of water savings. These measures require significant staff time to implement, which BWC does not retain permanently.

Plumbing fixture replacement with ultra low flow toilets costs approximately $9.00 per 1,000 gallons saved. This program would have to be in place a lengthy period before significant savings are realized and would probably require more than two months to set up. This measure has the potential of saving 10,000 to 20,000 gallons per year per toilet replaced.

Information programs are low cost and are required to be used if mandatory conservation programs are implemented. It can take as little as a week or as much as two months to get information to the customers depending on cost and the urgency of the information.

New development requirements, restrictions, offset programs and plumbing code changes do not have any significant direct costs. However, restrictions on connections can have significant indirect costs to BWC in the form of lost revenues.

Irrigation restrictions are fair to all customers. They can be the most effective way to reduce consumption. They also have the advantage of spreading out demands. The only problem is enforcement. If it is done in conjunction with price restructuring and rationing, it is most effective. The only lead time required is for notifying customers. There is a cost associated with enforcement, but this could be offset with fines collected for noncompliance.

Rationing is the most effective way to reduce demand. The water savings will be dependent on the level of the rationing but can be predicted easily. The lead-time required for a rationing program is limited to the time necessary to get the information out to the public. If the rationing is based upon past consumption there will be time needed to calculate every customer's allowance. This method is not equitable because it penalizes customers who were conserving in the past. A fixed allotment rationing establishes a customer's water consumption goal on a unit basis. This is easier to determine and can be varied by customer type. The cost to BWC of a rationing plan will include information dissemination, staff time and the cost of any incentives BWC chooses to offer to make compliance with the rationing easier.

Price changes can reduce consumption but the reduction amount is not easy to estimate. Excess use charges or increasing block rates charge a higher rate at higher levels of consumption. The amount of water saved can vary between 0.2 and 0.5 times the percentage price increase. So for example, if the rate increase is 100%, the savings could vary between 20% and 50%. A rate increase necessitates approval from the CPUC and can take a significant amount of time to implementation.

Stages of Action

Table 6-7: Water Shortage Stages and Reduction Objectives

(UWMPGB Table 35)

Stage	Conditions	Percentage Shortage
1 Minor (voluntary)	Groundwater in overdraft or 2 wells out of service	0% to 10%
2 Moderate (mandatory)	Groundwater in overdraft in second consecutive year or 3 wells out of service	10% to 20%
3 Severe (mandatory)	Available water production is 20% less than peak hour demands; 4 or more wells out of service or prolonged drought conditions	20% to 50%

6.2.2 Prohibitions, Consumption Reduction Methods, and Penalties

The first step in a demand reduction program is to prohibit wasteful practices and provide enforcement methods. BWC does not have an approved ordinance or resolution to this effect, however, CPUC Sheet No. 394-W and a billing insert have been used for this purpose in the past (see Appendix D).

Table 6-8: Water Shortage Contingency – Mandatory Prohibitions

(UWMPGB Table 36)

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
• Landscape water schedule (i.e. no watering between 10am and 5pm) • Outdoor water use reductions on 'non-watering' days • Open hoses not allowed (i.e. without a shutoff nozzle) • Initial fill or drain and refill of pools	Stage 1
• Limit watering days (i.e. watering only allowed two days per week) • Prohibit water usage for non-essential outdoor use (i.e. washing concrete, houses, cars, etc is prohibited)	Stage 2
• Outdoor water use prohibited • Only necessary indoor water use allowed • Boil Water Order may be issued	Stage 3

Stage 1, minor water shortage, requires a voluntary demand reduction effort. A public information campaign is initiated. The water shortage situation, other stages of the water shortage, and what could be expected in the future are explained. Voluntary conservation is requested. Additional information about ways to save water is sent to customers. Landscape watering may be restricted to outside peak demand hours. Hoses without self closing nozzles are not allowed.

Stage 2, moderate water shortage, requires a mandatory demand reduction effort. The public information program and participation in water conservation committees is continued. Customers are asked to conserve between 10% and 20%. BWC evaluates its water use for main flushing, street cleaning and landscaping to see if reductions are possible. The number of meters tested and repaired is increased.

Stage 3, severe water shortage, requires mandatory reductions in consumption through a rationing program. Water use is prohibited unless absolutely required and a Boil Water or No Drinking Order will be issued.

Table 6-9: Water Shortage Contingency – Consumption Reduction Methods

(UWMPGB Table 37)

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Limited Watering Schedule	1	Varies
Water-Saving Kits are available at no cost	2	Varies
Same as above, bottled water provided as necessary	3	Varies

6.2.3 Revenue and Expenditure Impacts/Measures to Overcome Impacts

As consumption drops so does revenue. If a rate adjustment is required, BWC will prepare a request to the CPUC, which will be reviewed and either approved or denied. An additional step BWC is taking is to develop a revenue reserve in months or years of excess income, which is rare.

Table 6-10: Water Shortage Contingency – Penalties and Charges

(UWMPGB Table 38)

Penalties or Charges	Stage When Penalty Takes Effect
3 Warnings are issued for non compliance	All
Fine is issued if warnings are not heeded	All
Water service is shut off if excessive use continues after warnings and fine	All

6.2.4 Actions During a Catastrophic Interruption

In the event of non-drought, related events that interrupt BWC's ability to provide water immediate measures need to be planned that will allow BWC to provide a minimum amount of water to customers. Possible catastrophes include a regional power outage or a natural disaster which affects selected facilities.

Table 6-11: Actions During a Catastrophic Event

Event	Action
Regional Power Outage	Utilize emergency backup power at selected facilities, provide public notice through broadcasts of emergency and ask customers to reduce consumption to essential uses.
Natural Disaster	Utilize emergency backup power if utility provided power is interrupted. Utilize backup wells and issue a boil order or no drinking order to provide adequate supply for sanitation and other non-potable living requirements.

6.3 Water Quality

Legal Requirements:

§10634 The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Groundwater quality is fairly consistent within the service area; BWC does not currently have any wells with water quality violations.

Table 6-12: Water Quality – Current and Projected Water Supply Impacts

(UWMPGB Table 30)

Water source	Description of condition	2010	2015	2020	2025	2030
Groundwater	Acceptable	0	0	0	0	0

It is not anticipated that water quality will adversely affect water supply in the near future. In the instance that a well has water quality issues, an alternative water supply will be put in place to compensate for the loss.

7 DEMAND MANAGEMENT MEASURES (DMM)

7.1 DMMs

Legal Requirements:

§10631(f)(1) and (2) (Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing;(L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-lowflush.

§10631(f)(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

§10631(f)(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

§10631(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

Bakman Water Company has a water conservation program in place; taking the issues regarding water conservation very seriously and implementing BMPs as necessary to achieve those goals. California Department of Water Resources (DWR) has expanded on typical BMPs in the form of Demand Management Measures, which are discussed below, including a description, implementation schedule and cost analysis if applicable. At this time, BWC is implementing 8 DMMs and planning for 1 DMM; DDM14 is non-cost effective and DDMs 1, 3, 10 and 11 are not applicable to BWC's situation.

Table 7-1: Demand Management Measures

Demand Management Measure	Implemented	Planned for Implementation	Cost Benefit Analysis Completed	Not Applicable
DMM1 – Water Survey Programs		X		
DMM 2 – Residential Plumbing Retrofit	X			
DMM3 – Water System Audits		X		
DMM4 – Metering and Commodity Rates	X			
DMM5 – Landscape Irrigation Programs	X			
DMM6 – Washing Machine Rebate Program		X		
DMM7 – Public Information Program	X			
DMM8 – School Education Program	X			
DMM9 – Commercial, Industrial and Institutional Conservation Programs	X			
DMM10 – Wholesale Agency Programs				X
DMM11 – Conservation Pricing		X		
DMM12 – Water Conservation Coordinator	X			
DMM13 – Water Waste Prohibition	X			
DMM14 – Ultra Low Flush Toilet Replacement			X	

7.1.1 Water Survey Programs

This program consists of offering water audits to residential customers. Audit components include reviewing water usage history with the customer, identifying leaks inside and outside, and recommending improvements.

BWC has not conducted surveys in the past due to the lack of meters within the system. Once the system is metered, a water survey program will be developed and implemented. It is anticipated the community will be fully metered by 2016; if this timeline met, the water survey program could be developed and implemented on the following schedule.

2014-2016: Water meter installations

2017: Develop Water Survey Program

2018: Begin conducting water surveys within Bakman Service Area

7.1.2 Residential Plumbing Retrofit

The Residential Plumbing Retrofit program was begun in 1997 and has been successful each year. BWC currently distributes approximately 200 showerheads from 2006 to 2010 and predict to continue a similar trend in the future. However, as meters are installed on the services, customers may become more adept in ways of conservation and the number of devices distributed could spike temporarily.

Table 7-2: Residential Plumbing Retrofit Implementation

	Actual / Projected				
	2006-2010	2015	2020	2025	2030
# of showerheads distributed	200	200	200	200	200
Actual/Projected water saving (afy)	0.62	0.62	0.62	0.62	0.62

7.1.3 Water System Audits

A water audit is a process of accounting for water use throughout a water system in order to quantify the unaccounted-for water.

BWC currently meters production at the wells and is in process to have meters installed on all service connections. Once the system has fully installed meters, BWC will have the ability to fully account for the water that is used and compare it against the quantity that is produced. Once the system is metered, quantities of water produced and delivered will be recorded and reviewed. Once 6 months of data is available, Bakman will be conduct an audit of the quantities and identify any anomalies; anomalies will be

traced to their source and corrected. Following this first system audit an annual program for evaluating the data will be developed and implemented on the following schedule.

2014-2015: Water meter installations

2016: Conduct first water system audit and correct problems

2017+: Develop and implement a water system audit program

7.1.4 Metering and Commodity Rates

At this time, approximately 25% of the service connections are metered. BWC is in the process of installing meters and intends to have all service connections metered by 2025.

The numbers shown in line item "# of retrofit meters installed" show the number of meters projected to be installed during each period, not a cumulative total of service connections that have a meter. This projection will assist BWC to reach the goal of having all connections metered by 2025.

Table 7-3: Metering and Commodity Rates Implementation

	Actual / Projected				
	2010	2015	2020	2025	2030
# of unmetered accounts*	1,830	1,160	596	0	0
# of retrofit meters installed	94	670	564	596	0

7.1.5 Landscape and Irrigation Programs

The large landscape areas within BWC's service area are owned by Caltrans or are public schools.

Caltrans operates a conservation program independent of BWC and manages their water schedules efficiently. Additionally, they employ staff responsible for maintaining the landscape irrigation system.

The public school district operate similarly and have operating procedures set forth by the Department of Education, which provides for budget to staff personnel on the school campus to inspect and maintain the irrigation system as well as purchase newer technology to irrigate in a more water efficient manner.

BWC does provide education for the school or Caltrans staff via DMM8 (below) but does not conduct surveys or develop budgets of these two types of properties.

At this time, there are no plans for new large landscape users within the BWC service area; however, if the need arises, Bakman will offer landscape education and provide information to the potential user(s) including water wise plants, water efficient irrigation controls and landscape surveys once the system is constructed. A potential implementation schedule for developing a landscape survey and information program would be approximately one year from identifying a potential need.

7.1.6 Washing Machine Rebate Program

BWC is working with the CPUC for authorization to conduct a washing machine rebate program. However, in the interim, Pacific, Gas & Electric does operate a rebate program the customers can take advantage of at this time. BWC will implement their own program once they receive approval from the CPUC.

7.1.7 Public Information Program

This program consists of distributing information to the public through a variety of methods including public presentations, brochures, school presentations and videos, and web sites.

Public Presentations:

BWC has sponsored the Water Tree at the Fresno County Fair in October each year for the past several years. The Water Tree is a life-sized educational experience for children of all ages. It illustrates, through interactive exhibits, how the water cycle works in the San Joaquin Valley and how vital water conservation is to the local environment.

Brochures:

BWC has water conservation pamphlets in their office showing drought tolerant gardening practices and distributes water conservation information via billing statements on a semi-regular basis. Additionally, BWC redistributes “A Water Resource Guide” created by the EPA and California State University, Fresno’s International Center for Water Technology (ICWT) program and launched a website for public awareness of conservation practices.

The recently conducted Consumer Confidence Report explains to users how to obtain the water-saving kits. BWC has conducted these events in the past and plans to continue to do so in the future.

School Presentations:

Bakman participates in local school events and provides materials and presentations during those events, as discussed further in Section 7.1.8.

Websites:

BWC has an active website where customers can find information regarding their water service, conservation, news about the system, system reports, policies and contact information for Bakman staff

Table 7-4: Public Information Program Implementation

	2010	2015	2020	2025	2030
Bill inserts/newsletters sent	X	X	X	X	X
Special Events	X	X	X	X	X
School Presentations	X	X	X	X	X
Website	X	X	X	X	X

7.1.8 School Education Program

BWC is involved with the local students through an Annual Carnival they sponsor each year. In past years, they have provided materials and presentations focused on educating about water conservation; they are planning to continue distributing information at the Carnival in future years. Additionally, BWC maintains connection to education through the Water Tree at the Fresno County Fair, membership in the Water Education Foundation and membership on the Central Valley Water Awareness Committee.

7.1.9 Commercial, Industrial, and Institutional Conservation Programs

Bakman currently offers assistance with water conservation including programming of sprinkler timers and informational packets explaining conservation principles and ideas for the commercial, industrial and institutional customers within the service area.

BWC also provides education to the school users through informational programs they conduct at the school campus.

Bakman anticipates the number of CII accounts to increase over the next 20 years and anticipates they will develop and implement a program to conduct surveys and visits to the CII customers, as the need arises. A potential implementation schedule for developing a CII Conservation program would be approximately two years from identifying a potential need. It is anticipated this will occur between 2015 and 2020, based on current growth projections within the service area.

7.1.10 Wholesale Agency Programs

DMM10 applies to wholesale agencies; Bakman Water Company is not a wholesale agency, so this DMM does not apply.

7.1.11 Conservation Pricing

Bakman went through the process of receiving CPUC approval on a volumetric rate structure to be implemented once the system is metered, which is anticipated to be complete by 2015. Once metered, the rate structure will be effective immediately.

A volumetric pricing structure encourages customers to conserve water by providing them a direct monetary benefit if their usage is lower. It also enables them to see how much water they are using and experiment with minimally invasive conservation methods to see what the result will be on their overall usage.

7.1.12 Water Conservation Coordinator

BWC utilizes a portion of time from a full-time employee to serve as the Water Conservation Coordinator.

Table 7-5: Water Conservation Coordinator Program Implementation

	Actual				
	2006	2007	2008	2009	2010
# of part-time positions	1	1	1	1	1
Actual expenditures ($)	$5,000	$5,000	$5,000	$5,000	$5,000

	Planned			
	2015	2020	2025	2030
# of part-time positions	1	1	1	1
Projected expenditures ($)	$5,000	$5,000	$5,000	$5,000

7.1.13 Water Waste Prohibition

Pursuant to BWC's CPUC Sheet No. 394-W, there are guidelines and assistance in place to discourage water waste. BWC has spent many man hours contacting users who are wasting water including posting notices, educating and offering contact information for contractors to repair internal leaks. BWC has also assisted in correcting sprinkler programming and educating customers on appropriate watering times. These

guidelines can be reinforced by writing citations should it be determined that a user is knowingly wasting water or continually wasting water after contact by BWC.

Table 7-6: Water Waste Prohibition Program Implementation

	2006-2010	2015	2020	2025	2030
Waste Ordinance in effect*	Yes	Yes	Yes	Yes	Yes
**Waste Ordinance utilized is CPUC Sheet No. 394-W (see Appendix D)*					

7.1.14 Ultra Low Flush Toilet Replacement

BWC has determined for its system, a toilet replacement program would be too costly. According to the EPA, the average person flushes the toilet 5.1 times per day. BWC has an average of 3.11 people per residence, which yields 16 flushes per day. A standard toilet uses an average of 3.5 gallons per flush (gpf), while a low flush toilet uses 1.28 gpf.

Table 7-7: Low Flush Toilet Cost/Benefit Analysis

Flushes per Day[1]	16
Gallons Saved per Flush[2]	2.22
Water Savings per Rebate (afy)	0.0394
Cost of Rebate[3]	$100
Cost per AF	$2,535.38

Notes:
[1] *EPA Toilet Supporting Statement*
[2] Standard Toilets use 3.5 gallons per flush; Low Flush Toilets use 1.28 gallons per flush per EPA guidelines
[3] Cost of Rebate includes hard cost of rebate and soft cost of managing and implementing rebate program.

As the calculation above shows, utilizing the rebate program would equate to a cost of $2,535.38 per acre-foot of water. BWC currently produces their water supply via well production for approximately $465.37 per acre-foot. The high cost of water savings for this program makes it economically infeasible to implement in BWC.

However, BWC utilizes water-savings kits, which contain a flush water reducing device instead (toilet tank bladders). These kits are considered more cost effective and more likely to be used by the public. They distribute approximately 200-250 of these kits per year.

8 CLIMATE CHANGE

8.1 UWMP Requirement

The UWMP Guidebook does not require a section on Climate Change but suggests it be included for a more complete representation of the water situation, as water supply and demand are related to the climate change phenomena.

8.2 Introduction

California currently enjoys a Mediterranean climate, which is not expected to change with climate change projections in the future. The climate consists of cool, wet winters and hot, dry summers typically.

Increases in global greenhouse gas levels are changing climate patterns around the world and, it is speculated, may begin to change at an accelerated pace from what has occurred in the past. This accelerated rate of change could result in impacts to the local climate of BWC in the form of higher temperatures, increased droughts and floods, decrease snow pack amounts and durations and other extreme variations in weather patterns. As the UWMP projects until 2030, these changes could be expected to manifest themselves over that period. The climate variations could affect the availability and volume of water resources.

8.3 Potential Impacts

In the past, the amount of rainfall has been fairly consistent, with periods of drought and periods of excess precipitation spaced relatively far apart. With climate change, the rainfall levels could begin to vary more from year to year, incurring droughts followed by excesses with less time between them. Typically, climate change predicts a decrease in average rainfall for the area, while temperatures are expected to increase. However, increase temperatures could intensify the El Nino Southern Oscillation cycle (ENSO), possibly resulting in very wet, wet years and drought level dry years.

For areas that rely on surface water deliveries, this weather pattern change could mean less dependable surface water deliveries, as the snow pack diminishes in some years. Additionally, if the temperatures increase as anticipated, the evaporation rate will increase also, meaning the available surface waters will evaporate more quickly. Higher evaporation rates will also increase the demand for additional irrigation water in farmland areas, depleting the amounts available to cities for potable consumption.

Increasing temperatures could start the spring melting period earlier and melt the snow pack at an increased rate, which will increase the need for capacity in storage facilities

and open channel conveyance facilities (i.e. canals). The increased melting rate could also lead to extensive flooding in lower lying areas due to lack of storage infrastructure.

8.4 Mitigation and Adaptation

To respond to the climate change predictions, the response must be two-fold: mitigation and adaptation. Mitigation consists of reducing the amount of green house gas emissions. Adaptation is the process of modifying behaviors in response to the warming climate and related changes.

In relation to water management, emission reduction can be achieved by reducing the amount of water usage, thereby decreasing the energy used to move, treat, and discharge water supplies. As BWC implements the DMMs discussed above, their usage will decrease and by association so will their energy use. DMMs that conserve water but utilize excess energy supplies to do so will need to be considered seriously to determine if they are desirable.

Adaptation is generally considered a local principle and, as such, must be contemplated in a very specific manner for each area. Adaptation can consist of more extensive master planning, enhanced management of surface water supplies, increased usage of recycled water, and investment in infrastructure to support the previously stated measures.

9 COMPLETED UWMP CHECKLIST

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1 Appendix B
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1 Appendix B
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Appendix A
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 1 Appendix B
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Appendix B
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1 Appendix B
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix A
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 6

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Section 1 Appendix A
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 1 Appendix B
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 3
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 1
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		N/A until 2015

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 3
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Appendix B
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 4
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Section 4
16	Describe the groundwater basin.	10631(b)(2)		Section 4

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 4
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 4 (In Process)
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 4
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 4
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Sections 3 and 5
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 3
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 4

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 4
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 4
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 4
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 4
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 4
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 4
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Sections 4, 5 and 6
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 5
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 5
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Section 5
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 5
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 5
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 5
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 5
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Section 5 Appendix D
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 6
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Appendix E
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)		N/A

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